LRFD End Bent

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Engineering Development
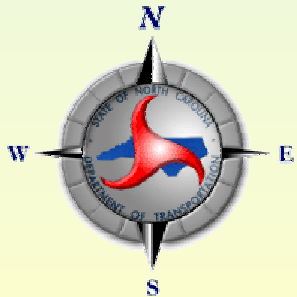
North Carolina Department of Transportation

LRFD vs. LFD

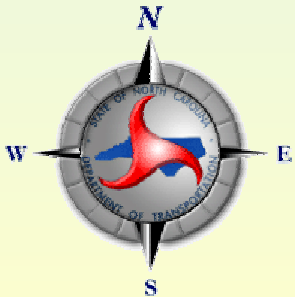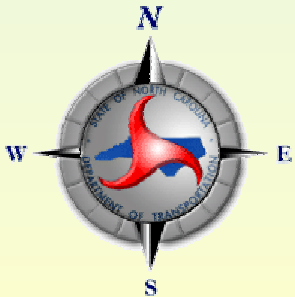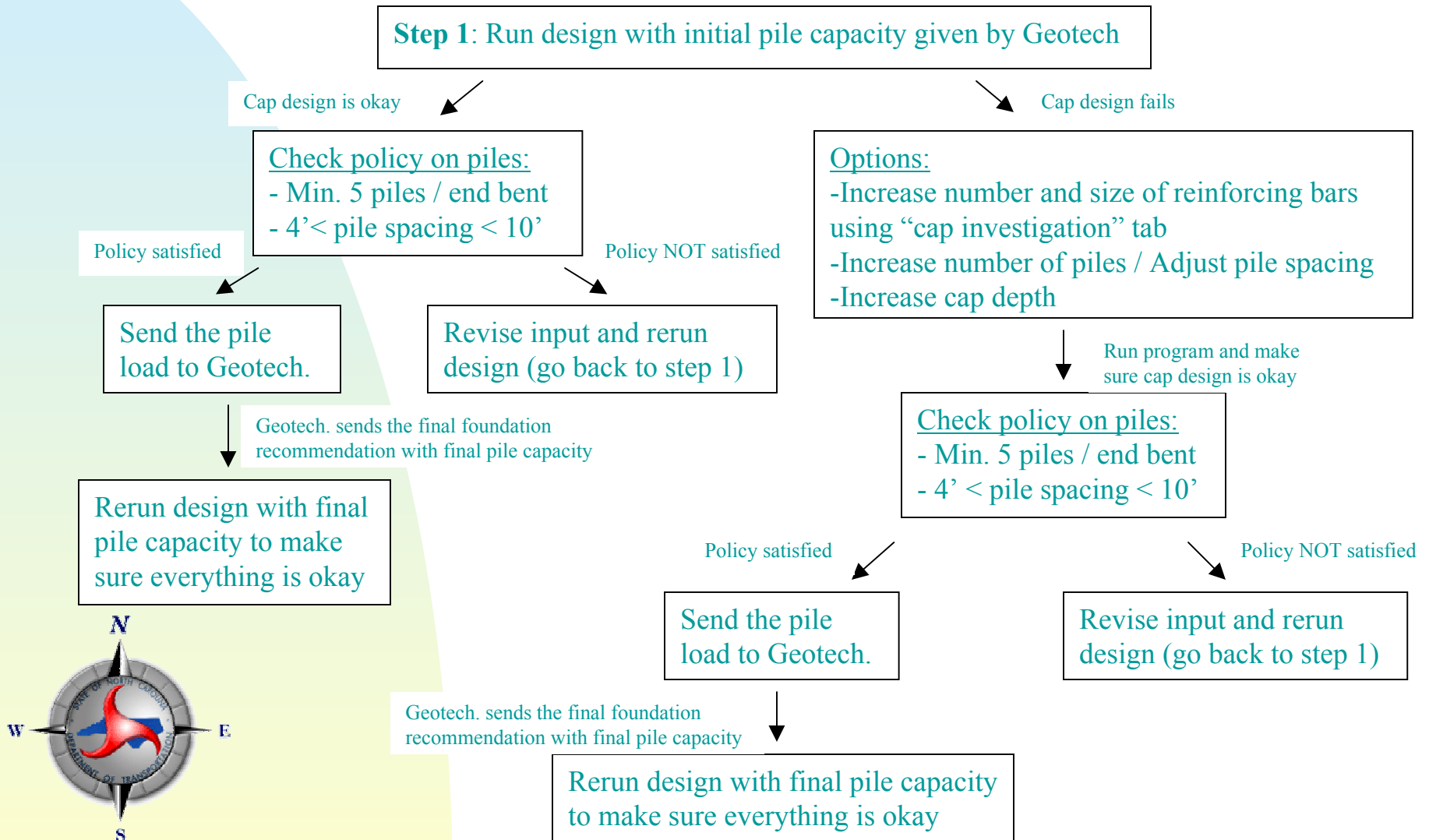|	**LRFD**	**LFD**
Loading used to determine # of piles	Factored	Unfactored
Live load	HL-93 ([Design Truck or Tandem] + Lane)	HS-20 (Truck or Lane)

New Policies

- Min. of 5 piles per end bent

- 4' =< pile spacing =< 10'

End Bent Design Flow Chart

Step 1: Run design with initial pile capacity given by Geotech

Cap design is okay

Cap design fails

Check policy on piles:
- Min. 5 piles / end bent
- 4'< pile spacing < 10'

Options:
-Increase number and size of reinforcing bars using "cap investigation" tab
-Increase number of piles / Adjust pile spacing
-Increase cap depth

Policy satisfied

Policy NOT satisfied

Send the pile load to Geotech.

Revise input and rerun design (go back to step 1)

Run program and make sure cap design is okay

Geotech. sends the final foundation recommendation with final pile capacity

Check policy on piles:
- Min. 5 piles / end bent
- 4' < pile spacing < 10'

Rerun design with final pile capacity to make sure everything is okay

Policy satisfied

Policy NOT satisfied

Send the pile load to Geotech.

Revise input and rerun design (go back to step 1)

Geotech. sends the final foundation recommendation with final pile capacity

Rerun design with final pile capacity to make sure everything is okay
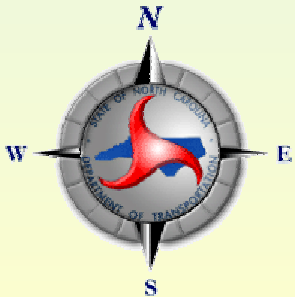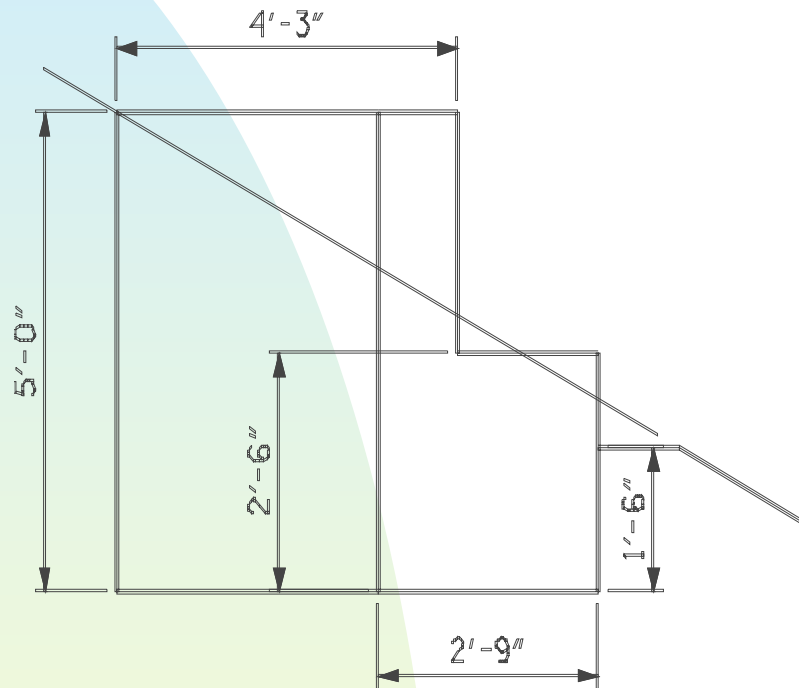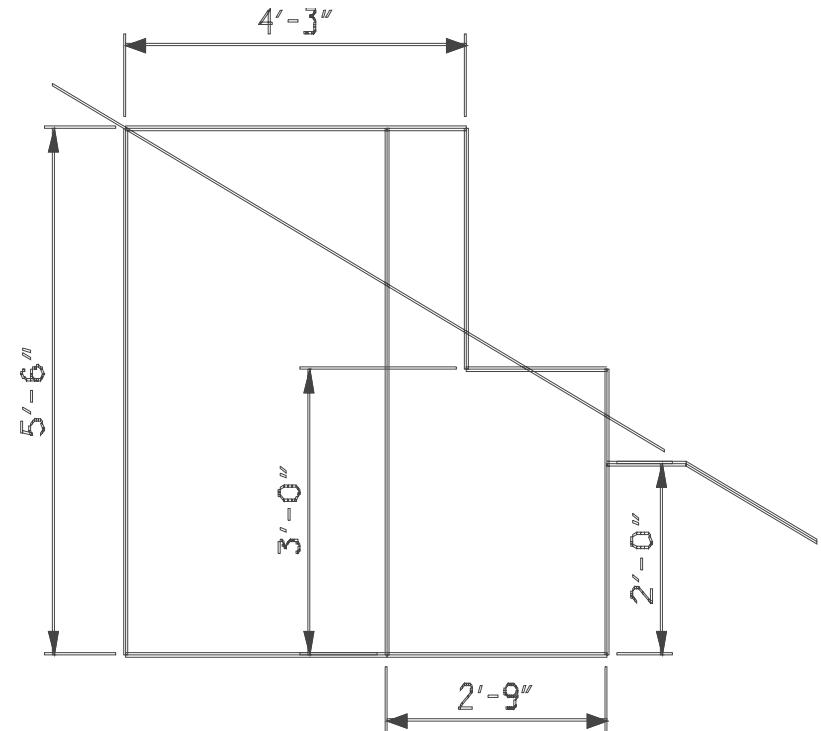
What you will expect

- Fewer # of piles

- Larger pile spacing

- Closer stirrup spacing
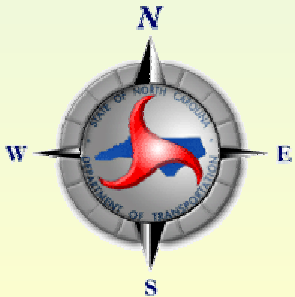
- Deeper cap (large bridges)

When increasing cap depth...

BEFORE

AFTER

Any questions before going to NCBDS?